463

THE VETERINARY JOURNAL

A Monthly Review of Veterinary Science.

Editor for Great Britain and Ireland:—

FREDERICK HOBDAY, F.R.C.V.S., F.R.S.E.,

FORMERLY PROFESSOR IN THE ROYAL VETERINARY COLLEGE, LONDON.

Editor for Australasia:—

J. A. GILRUTH, D.V.Sc., M.R.C.V.S., F.R.S.E.,

DEAN OF THE VETERINARY FACULTY, UNIVERSITY OF MELBOURNE, AUSTRALIA.

OLD SERIES, VOLUME LXXI.
NEW SERIES, VOLUME XXII., 1915.

LONDON:
BAILLIÈRE, TINDALL AND COX,
8, HENRIETTA STREET, COVENT GARDEN.

XUM

V.71

LONDON:
BAILLIÈRE, TINDALL AND COX,
8, HENRIETTA STREET, COVENT GARDEN, W.C.

XUM

THE
VETERINARY JOURNAL

JANUARY, 1915.

Editorial.

THE IMPORTANCE OF BEING CAUTIOUS.

GENIUS has been described as "an infinite capacity for taking pains." The veterinary surgeon who goes through a few years' practice without at some time or other becoming infected from live or dead subjects which he comes in contact with must be a genius of carefulness and possess a lucky star, or else a perfectly bacteria-proof epidermis. The daily life of practice necessitates putting our hands into dangerous, strange, and dark places, and it is no uncommon thing for us to come well within the range of infection many times in one day. That the personal danger is a real one is proved by the fact that not a few veterinary surgeons have died of anthrax, septicæmia, pyæmia, tuberculosis, &c. Only quite recently the death of an American veterinary surgeon (whilst in the full strength of manhood) from anthrax, after making a *post-mortem* on a diseased subject, has been notified, whilst not long ago a continental professor succumbed in the same way; and the death list in our own country is not wanting in examples of the kind.

Fortunately, the majority of infections which attack us do not prove fatal, but as we endure them they often cause us much restlessness and discomfort, if not actual pain. The prevalence of infection in our ranks is, we feel sure, by no means a negligible quantity. At a veterinary meeting we attended some time ago we were struck by the relation of instances of human contagion from the bacillus of swine erysipelas. If this phase of the question was fully discussed in regard to mange, ringworm, furunculosis, alopecia, accoucheur's eczema, pyæmia, and septi-

49635

XUM

cæmia, we are of opinion that many similar instances would come to light among our members. As a matter of fact, it is very rare indeed for any of us to possess really whole skins, and every breach in the integument furnishes a port of entry for infection, whilst even an intact epidermis, if its surface is not kept free from the organisms of disease, will soon suffer.

From the exigencies of practice which frequently necessitate the performance of operations, where water is not clean and toilet requisites of any kind conspicuous by their absence, we suffer more than our friends of the medical profession, who can have the run of the house and the call of the dwellers therein or a capable and watchful nurse whilst conducting their work.

How often can we purify our arms or hands thoroughly after a rectal, vaginal, or uterine examination, and even if we manage this fairly well, how can we prevent the rolled-up underclothing at the biceps or beneath the armpit becoming soiled, contaminated, or flushed by the products of disease? We cannot always change our clothing at every operation of this kind, and frequently we spend an hour or two in finishing our round with our soiled linen still in contact with the skin of our arm.

In the case of *post-mortems* we feel sure that the most effective protection is the wearing of indiarubber gloves. These are liable to split or tear, and then a finger rent may be repaired by carrying a supply of finger stalls with us. Flexible collodion or hand varnish may help us if rents occur in other parts of the glove. We wonder whether *mastisol* (mentioned on p. 497 of THE VETERINARY JOURNAL for September, 1914) will be manufactured by our own chemists, and whether it will supersede collodion, which has its faults, and is not even now considered the best application for wounds received whilst conducting *post-mortems*. Some experts advise thorough cleansing of scratches and lesions with soap and water, afterwards putting on a few drops of alcohol and ether or acetic acid, then a light bandage and a finger stall, and say that only thus is it safe to conduct further *post-mortem* procedure.

We have recently seen an indiarubber armlet which will fit closely over the rolled-up linen on the arm, and surround the biceps muscle so tightly that it is impossible for any discharges or fluid to get beneath the armlet at the biceps. Such a contrivance seems very handy and practical. The protection

afforded by it ought to be very acceptable to the practitioner who values a whole skin and who wishes to be up to date hygienically. It is becoming more and more certain that washing of the hands and arms with antiseptics is not all that we need as a safeguard; perhaps because, although perfectly done, the method itself is imperfect, or else because it is so seldom that we are able to conduct the procedure perfectly.

The subject of this article is important to the thinking man, and even if all the trouble we take does not produce a proportionate recompense, we may, by observing due and proper care, travel through our professional life *sans peur et sans reproche*.

FOOT-AND-MOUTH DISEASE.

In various important Continental States foot-and-mouth disease has often within recent years raged with great severity, and many cattle, sheep, pigs, and goats have been affected. At a time like the present, when large bodies of men and animals and vast quantities of stores and vehicles are on the move in these countries, and when measures against disease are likely to be slackly carried out or even in abeyance altogether, there is a likelihood that infection will spread largely, and that in the warm time of the year many cases of foot-and-mouth disease will occur. There is still some doubt as to all the agents capable of carrying infection, and whether horses, dogs, rabbits, rats, and birds can spread the disease; but all these creatures will be hurrying and scurrying over the areas affected by the war, and there will be ample opportunity for them to act as virus carriers. The factors for the occurrence of outbreaks of the disease in these isles would appear to be a good deal more prevalent and favourable than has been the case for many years, and it behoves all practitioners to be on the look-out for cases of the disease. More especially will the need for keenness arise when the military operations cease and men, horses, and stores begin to return to these shores. The difficulty in obtaining leather and its high price may lead to fresh supply markets being opened, and raw hides are known to carry infection. Cars and wagons used in transporting stock and stores ought to be far more frequently disinfected than is the case with us at present. On the Continent in times of peace this matter is well attended to, and scientific

XUM

papers are read on the subject and demonstrations given; but one hears and reads little of the matter here, and yet such procedure would seem to be specially indicated at this time.

To preserve our flocks and herds from disease and decimation, it is essential that an efficient force of well-organized veterinarians should remain at the service of the Board of Agriculture, for we feel absolutely sure that before very long there will be need for great activity as regards foot-and-mouth disease.

In America they have just had their fifth visitation in a period of forty-four years, but the organization and equipment of the Bureau of Animal Industry has soon enabled the authorities to stamp the disease out. The absolute necessity of its immediate extermination is fully realized, as once the disease gains headway great difficulties arise in its suppression.

SUSCEPTIBLE TO BRONCHITIS.

A LARGE number of farmers have complained to us this summer of the prevalence of bronchitis among Clydesdale colts, and are at a loss to explain the reason for it. The Clydesdale is a very slow-moving piece of mechanism, and when he gets anything he is slower letting go of it than a tight-fisted elder at camp meeting time. When bronchitis attacks a Clydesdale it elongates the palate and causes it to brush ever and anon across the face of the epiglottis, which brings the heaves to the surface, where they can be heard with perfect distinctness for two miles on a still night. The remedy is to reach down the colt's throat with a pair of tinner's shears and clip off the palate, in the meantime getting the nearest undertaker on the telephone. This is a simple home remedy and will not cost a cent if a man is quick on his feet.—*National Dairy Magazine.*

Selected Article.

ABSTRACT FROM A REPORT ON THE INFECTION OF CHILDREN WITH THE BOVINE TUBERCLE BACILLUS IN THE *BRITISH MEDICAL JOURNAL*.*

By A. PHILP MITCHELL, Ch.M., M.D., F.R.C.S.

Ernest Hart Memorial Scholar; formerly McCunn Scholar in Surgery, British Medical Research Scholar, and Resident Surgical Officer, Royal Hospital for Sick Children, Edinburgh.

(*From the Royal College of Physicians' Laboratory, Edinburgh.*)

In recent years the results of investigations on tuberculosis conducted by the British Royal Commission, the German Imperial Commission, and by many individual workers, have proved beyond a doubt the communicability of the bovine virus from animal to man.

While for the proof of this contention these investigators employed material obtained from human tuberculosis in its various forms, they were unable, owing to the small number of cases investigated, to define the extent and importance of the bovine infection in the commoner varieties of surgical tuberculosis affecting children. The subject of tuberculous cervical glands in children—a very frequent disease in Edinburgh—had received little attention, and this seemed to me a favourable one for investigation. The only way to obtain definite statistical evidence as to the relative frequency of the bovine and human types of infection was to undertake the examination of a large series of non-selected cases. Accordingly, I commenced such an inquiry at the beginning of 1911, and the special points of these investigations I wish to discuss here are:—

(*a*) Technique.

(*b*) Results of investigations—important relationship of clinical data and milk supply.

(*c*) Pathological considerations—relation between channels of infection and groups of glands involved.

(*d*) Channels of infection.

---

* Being an abstract of a thesis presented to the University of Edinburgh for the degree of Ch.M., and awarded a gold medal, July, 1913. The expenses of the research were defrayed from grants from the British Medical Association, the McCunn Trust, and the Carnegie Trust, for which I desire to express my thanks.

XUM

Technique.

I have investigated seventy-two consecutive cases of tuberculous cervical glands in children; of these, thirty-eight resided in Edinburgh and thirty-four came from neighbouring country districts (within a radius of thirty miles). The material for this study has come to my hand without selection through the kindness of Mr. Harold J. Stiles and Mr. C. Balfour Paul. Almost without exception the material was removed at operations at the Royal Hospital for Sick Children, Edinburgh. In a few instances it was obtained from operations in private practice. I received it in sterile gauze from the operating theatre, and have been, in all cases, able to guarantee freedom from contamination with other tuberculous material. Clinical histories were personally recorded in each case in the hope that I might be able to detect some feature or features of distinction between the cases in which bovine and human types of tubercle bacilli were found.

I also endeavoured, in every suitable case, to establish the relationship between the incidence of tuberculous cervical glands and the drinking of tuberculous cows' milk. I only expected to be able to trace the disease to the milk when, after the onset of symptoms pointing to infection by way of the mouth, the cow or cows from which the milk had been obtained were still available for examination.

Results of Investigations—Important Relationship of Clinical Data and Milk Supply.

Experimental investigations of the relative frequency of bovine and human tubercle bacilli in tuberculous cervical adenitis have been reported by Paul H. Lewis, 15 cases; British Royal Commission on Tuberculosis, 9 cases; H. Burckhardt, 9 cases; W. Litterer, 11 cases; H. Weber, 5 cases; Park and Krumwiede, 54 cases; Oehlecker, 14 cases; German Imperial Health Board, 3 cases.

Of the cases investigated by Lewis, nine were due to the bovine bacillus and six to the human type. The average age of the patients giving the bovine type of bacillus was $8\frac{1}{2}$ years. The youngest was 18 months, and the oldest 19 years. The average age of the six patients suffering from infection with the human type of bacillus was $17\frac{2}{3}$ years, the oldest 32 years, and the youngest 8 years.

The British Royal Commission examined nine cases. It is a noteworthy feature that all the cases except one were over 6 years of age. Three cases contained the bovine bacillus; ages, $1\frac{2}{12}$, 7, and $7\frac{1}{2}$ years. Six cases contained the human bacillus; ages, $11\frac{1}{2}$, 6, 12, 4, and 7 years.

Litterer's series consisted of eleven cases, and resulted in the isolation of five cultures of the human type and six cultures of the bovine type. Ages not stated.

Burckhardt found one bovine case out of nine cases of tuberculous glandular processes in the neck. The ages were 28, 21, 18, 18, 17, 15, 15, 12, and 6. The youngest yielded the bovine culture.

Weber studied five cases, and isolated the bovine type of tubercle bacillus from all. The ages were $1\frac{1}{2}$, 2, 4, $6\frac{1}{2}$, and 8 years.

Park and Krumwiede examined a series of fifty-four cases; nine cases were obtained from adults (16 years and over), and were without exception due to the human bacillus; twenty-seven cases from children (5 to 16 years) resulted in the isolation of the human type from nineteen and the bovine type from eight; eighteen cases from children under 5 years, twelve were due to the bovine type and six to the human type.

Oehlecker investigated fourteen consecutive cases. Two were in adults, both infections being of the human type; twelve cases in children yielded four cultures of the bovine type.

German Imperial Health Board, in a general series of cases, reported three of primary cervical adenitis in children under 10 years, two of which were due to bacilli of the bovine type and one to the human type.

On reading these statistics it is obvious that a comparison of the results of the individual investigators is impossible, since the number of cases investigated at each age period has varied so much. The results are too fragmentary for any conclusions to be drawn. All the cases have not been consecutive, and the importance of investigating a large number of cases of primary tuberculous cervical adenitis affecting young children has not been sufficiently recognized. This is one of the special factors to be considered in explaining the outstanding differences presented by the results of my investigations as compared with those of other investigators.

XUM

TABLE I.—CLINICAL DATA REGARDING 72 CONSECUTIVE CASES OF TUBERCULOUS CERVICAL GLANDS IN CHILDREN.

Number and initial	Age: Years	Duration of illness	Milk supply	Previous health	Type
1. A. G.	1½	15 months	Unsterilized cows' milk	Healthy	Bovine
2. I. B.	9½	2 years	Breast-fed (8 months)	Glands followed measles	Human
3. D. R.	4	5 months	Breast-fed (11 months)	—	,,
4. J. M.	2	14 ,,	Unsterilized cows' milk	—	Bovine
5. W. G.	1	6 ,,	Unsterilized cows' milk	Otitis media	,,
6. D. W.	2½	2 ,,	Breast-fed (12 months)	—	,,
7. D. F.	1¾	6 ,,	Unsterilized cows' milk	—	,,
8. J. D.	1½	4 ,,	Unsterilized cows' milk	—	,,
9. B. P.	9¼	1 year	Unsterilized cows' milk	Otitis media	,,
10. G. L.	9	18 months	Breast-fed (6 months)	Glands followed scarlet fever	,,
11. J. I.	3½	8 weeks	Unsterilized cows' milk	—	,,
12. H. D.	5	3 months	Breast-fed (9 months)	Glands followed measles and scarlet fever	,,
13. B. P.	1½	4 ,,	Unsterilized cows' milk	—	,,
14. M. M.	8	10 ,,	Breast-fed (10 months)	Glands followed measles	,,
15. J. M.	2	3 ,,	Breast-fed (8 months)	—	,,
16. R. F.	2½	8 ,,	Breast-fed (6 months)	—	,,
17. J. McB.	10	3 weeks	Unsterilized cows' milk	—	,,
18. A. W.	4	6 ,,	Breast-fed (12 months)	—	,,
19. W. B.	9	6 months	Unsterilized cows' milk	—	,,
20. J. M.	5	6 weeks	Unsterilized cows' milk	Glands followed whooping-cough	,,
21. M. S.	9	2 months	Unsterilized cows' milk	—	,,
22. R. G.	11	16 ,,	Unsterilized cows' milk	—	,,
23. M. F.	6	4 weeks	Breast-fed (8 months)	—	,,
24. R. A.	1¾	7 ,,	Unsterilized cows' milk	—	,,
25. W. H.	2	5 months	Breast-fed (6 months)	—	,,
26. B. S.	2	2 ,,	Unsterilized cows' milk	—	,,
27. M. J.	3½	2 ,,	Unsterilized cows' milk	—	,,

CLINICAL DATA REGARDING 72 CONSECUTIVE CASES OF TUBERCULOUS CERVICAL GLANDS IN CHILDREN—(*Continued.*)

Number and initial	Age: Years	Duration of illness	Milk supply	Previous health	Type
28. M. B.	6	3 months	Unsterilized cows' milk	—	Bovine
29. J. D.	4	7 ,,	Breast-fed (9 months)	—	,,
30. J. S.	8	5 ,,	Unsterilized cows' milk	—	,,
31. H. L.	4	4 ,,	Breast-fed (8 months)	—	,,
32. T. C.	4	3 years	Unsterilized cows' milk	—	,,
33. J. B.	4	8 months	Unsterilized cows' milk	—	,,
34. J. G.	2½	4 ,,	Breast-fed (6 months)	Glands followed measles	,,
35. C. H.	1½	2 weeks	Unsterilized cows' milk	—	,,
36. E. A.	3½	7 months	Breast-fed (9 months)	—	,,
37. J. McA.	4	12 ,,	Breast-fed (12 months)	Glands followed measles	,,
38. P. McD. ...	1½	15 ,,	Unsterilized cows' milk	—	,,
39. J. B.	7	3 ,,	Unsterilized cows' milk (father's byre)	—	,,
40. J. L.	11	3 ,,	Breast-fed (8 months)	—	Human
41. R. G.	5	3 ,,	Breast-fed (6 months)	—	Bovine
42. E. L.	6	12 ,,	Breast-fed (9 months)	Had pleurisy when 1 year old	Human
43. A. E.	8	4 ,,	Breast-fed (12 months)	Glands followed measles	Bovine
44. M. F.	2½	18 ,,	Unsterilized cows' milk	Glands followed measles	,,
45. C. S.	2	2 ,,	Unsterilized cows' milk	—	,,
46. J. F.	3	2 years	Unsterilized cows' milk	Otitis media since 18 months old	,,
47. E. C.	11	3 ,,	Breast-fed (12 months)	Measles	Human
48. W. S.	9	4 months	Unsterilized cows' milk	—	Bovine
49. W. S.	9	6 weeks	Breast-fed (9 months)	—	,,
50. M. B.	3	6 months	Unsterilized cows' milk	—	,,
51. J. H.	7	5 ,,	Breast-fed (15 months)	Glands followed measles and mumps	,,
52. C. T.	5	6 ,,	Unsterilized cows' milk	—	,,
53. B. F.	1¼	1 week	Unsterilized cows' milk	—	,,

CLINICAL DATA REGARDING 72 CONSECUTIVE CASES OF TUBERCULOUS CERVICAL GLANDS IN CHILDREN.—(*Continued.*)

Number and initial	Age: Years	Duration of illness	Milk supply	Previous health	Type
54. J. M.	3	6 months	Unsterilized cows' milk	Glands followed measles	Bovine
55. T. H.	5 months	2 ,,	Breast-fed (5 months)	Tuberculous disease of mastoid since 3 months old	Human
56. R. D.	8	3 ,,	Unsterilized cows' milk	Glands followed typhoid fever	Bovine
57. W. L.	3½	6 ,,	Unsterilized cows' milk	—	,,
58. P. C.	10 months	2 ,,	Breast-fed (3 months)	—	Human
59. A. M.	5½	3 ,,	Unsterilized cows' milk	—	Bovine
60. C. W.	2	2 ,,	Unsterilized cows' milk	—	,,
61. J. P.	6½	2 years	Unsterilized cows' milk	—	,,
62. M. M.	10	18 months	Unsterilized cows' milk	Glands followed tonsilitis	,,
63. C. H.	3	1 year	Unsterilized cows' milk (father's byre)	—	,,
64. M. McL. ...	1½	1 month	Unsterilized cows' milk	Glands followed tonsillitis	,,
65. M. W.	7	6 weeks	Breast-fed (9 months)	—	,,
66. M. W.	7	3 months	Unsterilized cows' milk	—	,
67. B. C.	10	8 ,,	Breast-fed (15 months)	—	,,
68. W. L.	9 months	6 ,,	Unsterilized cows' milk	—	,,
69. J. W.	12	2 years	Unsterilized cows' milk (father's byre)	Measles and whooping-cough	,,
70. L. T.	12	2 months	Unsterilized cows' milk	—	,,
71. M. C.	8	3 ,,	Unsterilized cows' milk	—	,,
72. A. McD. ...	8	2 years	Breast-fed (9 months)	Glands followed measles	,,

I found that out of a total of seventy-two cases in children, in sixty-five instances (90 per cent.) the bovine bacillus was present, and in seven cases (10 per cent.) the human bacillus.

I believe that these results can be verified by a careful consideration of certain clinical data, which have been personally gathered, such as age, family history, geographical relations, and the milk supply. A correct interpretation of the bacteriological findings is impossible without specially considering the

nature of the clinical data of the cases reported. The correlation between these factors has, I regret, frequently been overlooked by Continental workers.

The clinical data collected may be conveniently tabulated (see Table I).

Clinical Data.

Age of Patients.

Age is a most important factor in such experimental inquiries. I reiterate that some investigators have apparently not recognized the importance of studying the disease in young children and the influence of age on the type of bacillus isolated.

I have tabulated the cases according to the age and type of infection to show the relative frequency of types at the various age periods:—

Table II.—Ages with Types of Tubercle Bacilli from Tuberculous Cervical Glands.

Age	Human	Bovine	Total
To 1 year	2	1	3
1 to 2 years	—	16	16
2 ,, 3 ,, ...	—	8	8
3 ,, 4 ,, ...	1	10	11
4 ,, 5 ,, ...	—	4	4
5 ,, 6 ,, ...	1	4	5
6 ,, 7 ,, ...	—	5	5
7 ,, 8 ,, ...	—	5	5
8 ,, 9 ,, ...	—	5	5
9 ,, 10 ,, ...	1	4	5
10 ,, 12 ,, ...	2	3	5
	7	65	72

Table III.

Children 5 to 12 years of age:		
Human bacilli	4	
Bovine bacilli	30	
Children under 5 years of age:		
Human bacilli	3	
Bovine bacilli	35	
Grand total	72	cases

A most striking fact brought out is the high incidence of the disease in children under 3 years of age. This is not surprising when it is recalled that the large majority of children of this age are nourished in whole or in part on cows' milk. I find that, in my series of cases, 84 per cent. of the children 2 years of age and under have been fed with unsterilized cows' milk since birth. The correlation between this observation and that of the high

incidence of bovine cervical glandular tuberculosis during the same age period points wholly to the drinking of tuberculous cows' milk as the most probable source of infection. I contend that if in Edinburgh and district the number of cases of tuberculous cervical glands in children under 3 years of age is much above the normal, and if, in that same neighbourhood, a large proportion of the cows are affected with tuberculosis, and further, if it is usual to feed the children on unsterilized milk, then the increased incidence of tuberculous cervical glands in young children is probable evidence that the disease is due to the drinking of milk from tuberculous cows.

NOTES ON THE FAMILY HISTORY OF TUBERCLE IN CASES CONTAINED IN TABLE I.

Case 9.—Brother, aged 6, died from generalized tuberculosis. Brother, aged 5, has tuberculous cervical abscesses. These developed three months after the first appearance of the patient's.

Case 19.—Sister, aged 6, died from tuberculous meningitis one month after the patient's glands were excised.

Case 22.—Sister, aged 8, has tuberculous cervical glands.

Case 23.—Brother, aged 2, had tuberculous abscess in neck eighteen months previous to onset of the patient's glands.

Case 25.—Brother, aged 3, had tuberculous cervical abscess in December, 1910, when the patient's glands were first noticed.

Case 26.—Brother, aged 18 months, died from tuberculous meningitis in 1909.

Case 32.—Sister, aged 2, had hypertrophied faucial tonsils removed one month after the patient's glands were excised. The tonsils I found to be tuberculous and harbouring the bovine type of bacillus.

Case 41.—Brother has tuberculous disease of humerus.

Case 43.—Brother, aged 6½, died from tuberculous disease of the spine.

Case 45.—Brother, aged 9, died from tuberculous meningitis. Sister, aged 5, had a leg amputated for tuberculous disease. Sister, aged 17, died from generalized tuberculosis, being primarily in the cervical glands.

Case 47.—Father died from pulmonary tuberculosis. Mother has enlarged cervical glands. Sister, aged 4, died from abdominal tuberculosis.

XUM

Case 51.—Sister, aged 12, has tuberculous glands in the neck. Brother, aged 8 months, died from tuberculous meningitis.

Case 55.—Mother has tuberculous disease of mastoid.

Case 57.—Sister, aged 10, had hypertrophied faucial tonsils removed three months before excision of her brother's glands. The tonsils were found to be tuberculous and to harbour the bovine type of bacillus.

Case 58.—Father treated for pulmonary tuberculosis during the last ten years.

Case 60.—Brother, aged 8, died from tuberculous meningitis three years ago.

Case 65.—Infant brother died from abdominal tuberculosis.

Case 68.—Brother had tuberculous cervical glands excised a year ago.

Case 71.—Sister, aged 2, had tuberculous cervical glands excised. They appeared at the same time as the patient's.

Family History of Tuberculosis.

This has been carefully investigated in every case, with special reference to the existence of pulmonary tuberculosis in the parents and other members of the household. When such a focus exists in any family it must constitute a probable and most dangerous source of infection. In only three instances was a history of pulmonary tuberculosis occurring in the patient's family found; in one case the mother and in the other two the father. Each patient had been living for years in contact with a "consumptive" when the glands appeared.

In each of the three cases the human type of tubercle bacillus was isolated from the cervical glands. There was no history of pulmonary tuberculosis in the remaining four human cases.

As regards the bovine cases, it seems more than a coincidence that in not a single case was there a history of pulmonary tuberculosis in the various families. In sixteen cases (Nos. 9, 19, 22, 23, 25, 26, 32, 41, 43, 45, 51, 57, 60, 65, 68, and 71), however, one or more of the other children in the respective families were affected with various forms of surgical tuberculosis. Although these cases are fully recorded in Table I, I should like to draw attention to the milk supply in a few.

In Case 25, a brother, aged 3, had a tuberculous cervical abscess in December, 1910, when the patient's glands were first

XUM

noticed. I investigated the milk supply, and found that a cow with advanced tuberculosis of the udder had been removed for destruction in September, 1910. This cow had been in the byre for several months, and I have not the slightest doubt that its milk was responsible for these two cases of tuberculous cervical adenitis.

In Case 26, a brother, aged 18 months, died from tuberculous meningitis in 1909. The patient's glands appeared in December, 1910. The onset was acute. I found the milk was obtained from a byre situated just beyond the city boundary. I visited the byre, and the dairyman readily confessed that he had disposed in October, 1910, of a very tuberculous cow with the udder involved. The cow had been in the byre many months. The circumstantial evidence was likewise strong in this case.

In Case 32, a sister, aged 2, had tonsillotomy performed (one month after the patient's glands were excised) for hypertrophied faucial tonsils with no clinical evidence of cervical lymphatic tuberculosis, and from them I isolated the bovine type of tubercle bacillus. The family consisted of two children, who had been given plenty of unsterilized cows' milk to drink.

In Case 57, a sister, aged 10, had tonsillotomy performed (three months before the patient's glands were excised) for hypertrophied faucial tonsils with no clinical evidence of cervical lymphatic tuberculosis, and from them I isolated the bovine type of tubercle bacillus.

It seems to me a justifiable conclusion that, at any rate, in each of these sixteen families the children acquired the tuberculous disease from an infected milk supply.

Milk Supply.

A consideration of the milk supply becomes of prime importance in a series of cases of glandular tuberculosis in children yielding such a high percentage of bovine infection. Whatever may be the case in other countries, the mode of feeding children in Britain, especially in Scotland, is such as to favour bovine infection. I have already stated that in my series 84 per cent. of the children 2 years of age and under were nourished from birth with unsterilized milk. That a large proportion of Scottish babies are bottle-fed, and that it is the exception rather than the rule to sterilize the milk are factors the significance and import-

ance of which have not been fully recognized by many investigators in other countries.

As evidence in favour of the view that the ingestion of tuberculous cows' milk is an important cause of surgical tuberculosis in children, I might record several cases in which the relationship of cause and effect appear to be obvious. The milk supply was investigated in every suitable case, and from many town and country expeditions I have gained much valuable information regarding the existing conditions under which milk is produced and sold. The opportunities for tracing bovine infection are much greater in small communities and rural districts than in large cities. It is the country practitioner who could gather together much valuable information. As examples of what not infrequently happens, let me instance the following:—

(*a*) A country child, aged 9 months, whom Mr. Stiles operated on a few months ago for multiple osseous tuberculosis, proved to be a very instructive case. The father and mother and the other children were all healthy. The milk was obtained from a small dairy farm in the village. Investigating the milk supply of this patient, I discovered that of the six cows in the byre two had tuberculous udders, with the milk from both teeming with tubercle bacilli.

(*b*) There was brought, a short time ago, to the surgical outpatient department of the Royal Hospital for Sick Children, Edinburgh, a child, aged 1 year and 5 months, suffering from multiple osseous tuberculosis. I elicited from the mother the following appalling history: The baby had been bottle-fed with milk obtained from a small dairy farm. The mother had been informed by the child's grandfather, who worked on the farm, that soon after the birth of the child one of the cows had "gone wrong." He told how the animal had rapidly wasted, become so weak that it was unable to stand; it was actually milked lying on the ground, and this milk was used for human consumption! By this time it was thought expedient to call in a veterinary surgeon, who, finding the animal suffering from generalized tuberculosis with marked involvement of the udder, at once ordered its destruction and burial.

In both cases the bovine type of bacillus was isolated.

(*c*) C. A., aged 6. Swelling appeared suddenly on right side of the neck (upper carotid region) about the end of November,

XUM

1912. Abscess rapidly formed. Pus swarming with tubercle bacilli. Sterno-mastoid muscle extensively involved by the tuberculous process. Right faucial tonsil slightly enlarged and showed a dirty surface. The patient usually had unsterilized cows' milk at every meal. Daily supply of milk to the house about two gallons, and obtained from dairy farm where twenty cows were kept. Byre visited in December, 1912, and it was ascertained that a cow affected with generalized tuberculosis (lungs and udder involved) had been removed for destruction from the byre in October, 1912. This cow had been in the byre and used for milking for about four years. I isolated the bovine type of tubercle bacillus from both the cervical glands and the right faucial tonsil.

(*d*) C. H., aged 3. Swelling in neck appeared in February, 1910, when the patient was 2 years old. Abscess rapidly formed. Nourished from birth with unsterilized cows' milk, which was usually obtained from three cows in the father's byre, which contained thirty-eight cows. I interviewed the father, and found that one of his cows had died in May, 1910, from advanced generalized tuberculosis.

(*e*) Sometimes it has happened that two or three cases of tuberculous cervical glands have come from the same district in the town, within a few days of one another, to the Sick Children's Hospital. They had been supplied with milk from the same dairy for years, and I ascertained from the city veterinary inspector that a cow with a tuberculous udder had recently been removed from the byre in question.

(*f*) Some time ago Mr. Stiles was asked to see a baby the mother thought was suffering merely from the effects of teething. The child was found to be suffering not only from multiple tuberculous dactylitis of the hands and feet, but also from tuberculous disease of the upper jaw, of both frontal bones, and of the cervical and mesenteric glands. No operation was recommended. Death occurred six weeks later from tuberculous meningitis. The parents were both free from tubercle, as also were the other children. On inquiry into the milk supply Mr. Stiles was informed that two cows were kept on the Home Farm for the special use of the household, that they had both been tested, and that neither of them reacted to the tuberculin test, which had been applied six months previously. He suggested

that they were probably too tuberculous to react, and that the best plan would be to kill them. This was done, with the result that both cows were found to be suffering from general tuberculosis, and that one of them had a tuberculous udder. In this case it is evident that the cows were so extensively tuberculous that they failed to respond to the tuberculin test.

I merely instance these cases to show what is happening here and there throughout the country. They also prove that not only the resistance of the patient but the dosage exercises a great influence on the extent and spread of the disease.

While the faucial tonsils and the cervical glands must often succeed in killing the small numbers of tubercle bacilli which are frequently present in unsterilized milk, they fail to cope with such large amounts as are ingested by children who are unfortunately being nourished with milk from a single cow with tuberculosis of the udder or from a small herd harbouring a cow with udder tuberculosis or with advanced clinical tuberculosis. It has been shown by Delépine that one part of the milk from a cow with udder tuberculosis is capable of infecting 100,000 parts of sound milk and producing tuberculosis in guinea-pigs. He therefore concluded that one cow with udder tuberculosis was capable of infecting the mixed milk from a large herd. Further, it may be confidently stated that the reason why so many children do not present any clinical evidence of tuberculosis, in spite of the fact that they are frequently drinking infected milk, is to be found in a consideration of the results of certain animal experiments.

Feeding experiments in animals have shown that while inhalation of tubercle bacilli is a certain method of infecting the animal even when small doses of bacilli are employed, very much larger doses are required to produce the disease by way of the alimentary canal. It is perfectly plain, therefore, that when the milk is obtained from a single cow with udder tuberculosis, or with advanced generalized tuberculosis, or from the mixed milk from a small herd, containing one or more tuberculous cows, a child may receive the infection in concentrated form. If, then, man derives a certain percentage of infection from bovines, it is reasonable to expect that where tuberculosis in human subjects is of frequent occurrence, the bovine disease will also be rife, and that raw milk formed an important article of diet. It is not

remarkable that a causal relationship between the two does exist, when it is recalled how frequently raw milk is used as a food, and is one of the few animal products used by civilized man in the uncooked state. And, moreover, it constitutes the chief nourishment of the large majority of children. I believe that the chief reasons why bovine tuberculosis is so extremely common amongst children in Edinburgh and district are the great prevalence of tuberculosis in dairy cows, the present very inadequate veterinary inspection, and the gross ignorance of the dairy farmers in matters relating to bovine tuberculosis. Although extensive and accurate statistics are wanting in this country regarding the number of tuberculous cows, we have a sufficiency of data to form a fairly accurate estimate. The extent to which tuberculosis is prevalent in cows can only be determined by the tuberculin test, which has not been used very extensively in this country.

Inspection of the byres and cows in Edinburgh under the Public Health Department was first instituted in 1900. The following table, compiled by me from the medical officer's reports, 1900-1912, shows the number of tuberculous cows removed annually from the city byres:—

TUBERCULOSIS AMONGST EDINBURGH DAIRY COWS, 1900 to 1912.

Year	Byres in city	Byres closed	Number of cows	Veterinary inspections of city byres	Veterinary inspections of country byres	Number of cows removed for tuberculosis	Site of tuberculous lesions
1900	124	—	3,000	—	—	25	Tuberculosis of udder, 11.
1901	140	5	3,366	1,863	—	23	Tuberculosis of udder, 14.
1902	127	15	3,097	1,601	—	16	Udder, 5; lungs, 4.
1903	115	4	3,072	2,021	—	35	Lungs, 24; udder, 5; clinical, 6.
1904	115	3	2,974	1,866	—	39	Lungs, 27; udder, 5; clinical, 7.
1905	111	7	2,942	2,113	—	37	Lungs, 23; udder, 9; clinical, 5.
1906	108	4	2,944	2,211	—	31	Lungs, 20; udder, 5; clinical, 5; uterus, 1.
1907	99	9	2,765	2,070	10	29	Lungs, 19; udder, 9; clinical, 1.
1908	97	2	2,793	1,638	10	28	Lungs, 14; udder, 3; clinical, 11.
1909	96	1	2,831	1,531	22	36	Lungs, 23; udder, 13.
1910	90	6	2,708	1,439	30	36	Lungs, 9; udder, 20; clinical, 7.
1911	81	9	2,446	1,158	20	27	Lungs, 16; udder, 6; clinical, 5.
1912	76	5	2,318	1,126	20	23	Lungs, 9; udder, 10; clinical, 3.

It will be observed that much attention has been given to the establishment of better ventilated and more sanitary byres in

Edinburgh. In spite of the closing of so many byres during the last twelve years, the number of tuberculous cows removed annually from the city byres remains practically the same, which would point to very little benefit having followed from improved animal sanitation. These observations are also identical with those made by Professor Delépine in the Manchester district. Further, it is to be noted that the Edinburgh City veterinary inspector has ordered, on an average, the removal of thirty tuberculous cows annually from the city byres, and of the thirty about ten had tuberculosis of the udder.

The important practical point to consider is the extent to which tuberculous cows yield tubercle bacilli in the milk. Until a few years ago it was a commonly accepted view that tubercle bacilli were only found in milk when the udder was affected. As a result of the experimental work of Schroeder in America, and more recently that of the last Royal Commission on Tuberculosis in this country, we now know this not to be the case. Their results prove indisputably that tubercle bacilli may and do gain access to milk from cows which clinically show no signs of udder tuberculosis, or, indeed, any form of tuberculosis. Of course, it must be emphasized that extensive infection of milk with tubercle bacilli is mainly from cows either marked "piners" or those suffering from tuberculous infection of the udder. On this account chief significance must still be attached to the cows with udder tuberculosis, and information as to the prevalence of this condition in Scotland is most important and still wanting.

The very absence of any definite sign in the earlier stage is one of the greatest dangers of this condition. According to Delépine it is practically impossible for the veterinary surgeon unaided to discover by ordinary inspection early tuberculous lesions of the udder. Further, it is also impossible for the most experienced veterinary surgeon to distinguish by inspection and palpation tuberculous mastitis from all the other forms of mastitis. There appears to be no escape from the conclusion that clinical examination alone cannot be relied on for the detection of udder tuberculosis, and one naturally asks how it can be reliably detected. Inoculation of the milk into experimental animals (guinea-pigs and rabbits) is the most certain method. This method, as far as I can gather from the medical officer's annual reports (1900 to 1912), is very seldom employed in Edinburgh.

XUM

The milk from a tuberculous udder retains for a long time—often a month—its natural appearance. The possibility of infection is thereby highly increased, for the milker lets the milk run into the pail as long as it looks natural, and sometimes even after it has commenced to look somewhat thin and fluffy. Tuberculosis of the udder is, therefore, a very dangerous disseminator of infection, and it is by no means a rare disease.

What system is employed at present in Scotland to protect the public against an undoubted source of infection? In the smaller towns and villages scattered throughout Scotland there is practically no veterinary inspection whatever. In the larger towns there is a certain amount, but its complete inadequacy is only too apparent; for example, in Edinburgh, one veterinary surgeon (who is also a food and drug inspector) is expected to examine all the cows—fully 2,000—in the city byres at intervals of not less than three weeks, and in addition he endeavours to supervise the supply of milk from the byres outside the city boundary (numbering about 250 compared with 76 inside the city). Referring to the city report for 1910, 1,439 inspections of the city byres are recorded against 30 of the byres beyond the city. The inadequacy of this supervision is quite apparent, and the fact that the city milk supply from the country is steadily increasing every year strongly emphasizes the immediate necessity for some radical change. Under the provisions of the Public Health (Scotland) Act, 1897, and the Edinburgh Municipal and Police (Amendment) Act, 1891, the owner of a tuberculous cow is ordered to have it removed within a specified time—namely, twenty-four hours—after the official notice is served; but it is left entirely to his own discretion to dispose of the diseased cow as he may think fit. The seller is under no compulsion to say in what manner he has disposed of the animal, and the buyer is not compelled to notify the authorities that he is in possession of a tuberculous cow.

This is indeed a travesty and burlesque of efficient administration that there is absolutely no safeguard against a considerable proportion of these animals, for a time at least, continuing to propagate the disease. As no method of branding such animals is employed there is no reason why the tuberculous cow may not be transferred to another herd and continue contributing to the city's daily milk supply, or find its way to the North of England, as a great many do.

Although it is an undisputed fact that tuberculous milk is very much more dangerous than is tuberculous meat, yet the anomaly of the situation is evident when it is noted that the local authorities have powers to seize and destroy tuberculous cows exposed for sale for food purposes, but are powerless to seize tuberculous cows supplying milk for human consumption. Surely, in the face of all the foregoing evidence it cannot be denied that the provision of a pure, wholesome, and tubercle-free milk supply is a problem of great national importance, and rightly claims its immediate consideration by the Government. It seems almost criminal negligence to permit the present state of affairs to continue.

Tuberculosis amongst dairy cows could be practically eliminated in time by providing, throughout the United Kingdom, for a regular and adequate system of veterinary inspection; the frequent examination of samples of milk by inoculation of experimental animals; the destruction of all cows which show evidence of tuberculosis of the udder, tuberculosis of the lungs, or give tuberculous milk, and those which are clinically tuberculous; the segregation and permanent ear-marking of all animals reacting to the tuberculin test; and the absolute prohibition of the use of their milk for human food; and, finally, the gradual establishment of tubercle-free herds.

Channels of Infection.

From what has already been said regarding the order in which the cervical lymphatic glands are infected my conclusion is that the mouth and naso-pharynx have been the avenues of infection.

The more frequent involvement of the glands in front of the sterno-mastoid muscle in the upper carotid region is strongly suggestive of the faucial tonsils being more often a source of infection than the adenoids. In tuberculous disease of the upper deep cervical glands the faucial tonsils have an importance not hitherto well enough recognized or understood. The position of the tonsils at the entrance to the digestive tract favours infection more with food than with inspired air, a fact of great consequence in considering the frequency with which cervical glands in children harbour the bovine type of tubercle bacillus. Furthermore, the very direct and short pathway between the tonsils and the tonsillar lymphatic glands explains the frequency

with which well-marked tuberculosis of these glands may be secondary to a small focus in a tonsil.

Lesions in the Tonsil.—I have investigated the faucial tonsils from 64 consecutive cases of children suffering from tuberculous disease of the upper deep cervical glands; 24 (37·5 per cent.) of these cases showed histological evidence of tuberculosis in the tonsils. There are no clinical signs by which the condition can be recognized. In the majority of cases the tonsil retains its normal appearance, is small, and frequently receding. Occasionally the tonsil is flat and its surface fissured, or it may be hypertrophied, the external surface showing *no* ulceration. The chief sites for tuberculous lesions in the tonsil are:—

(1) Surrounding the deeper parts of crypts, especially the supratonsillar group.

(2) Immediately under the mucous membrane near the mouths of crypts.

(3) Deep in tonsil, close to posterior capsule.

The lesions may be localized or generalized.

Experimental inoculation of guinea-pigs and rabbits with pieces of tonsillar tissue yielded positive results in nineteen cases (30 per cent.); and of these the bovine bacillus was present in twelve cases and the human in three cases.

I have also investigated the hypertrophied faucial tonsils removed from ninety children, in whom the cervical glands showed no clinical evidence of tuberculous disease; six (6·5 per cent.) of these hypertrophied tonsils gave histological evidence of tuberculous disease, while nine (10 per cent.) yielded positive results when inoculated into guinea-pigs. The bovine bacillus was present in three cases, and the human in one case.

General Conclusions.

Cows' milk containing bovine tubercle bacilli is clearly the cause of 90 per cent. of the cases of tuberculous cervical glands in infants and children residing in Edinburgh and district, and is responsible for by far the larger proportion of tuberculous cervical glands in children during the milk drinking period of life (0 to 5 years).

The concentration of attention on the existence of human sources of infection has in the past quite overshadowed the evidence that the drinking of milk is an important factor in the infection of children with tuberculosis. Having demonstrated

XUM

that a larger percentage of cases of tuberculous cervical glands in children is due to the bovine tubercle bacillus than previously believed, the need for immediate action is evident and becomes an absolute necessity.

Bovine tuberculosis can, therefore, no longer be considered a negligible factor in respect to the spread of tuberculosis amongst children, more especially since unsterilized cows' milk in this country is a vehicle by which tubercle bacilli must most frequently be introduced into the bodies of children.

The powers at present vested in our local authorities are grossly inadequate, and it seems to me to be our special duty to endeavour to prevent this enormous and entirely preventible amount of tuberculosis amongst children. It is a national problem, and the earlier it is faced the more easily will it be solved.

That measures for the protection of children against infection with the bovine virus are indispensable is an indisputable fact. Whatever powers may be given to the local authorities, they must, to be effective, be so framed that their application throughout the United Kingdom will be uniformly compulsory. I am convinced that the Tuberculosis Order (1913) would in conjunction with the Milk and Dairies Bill (if passed) result in a marked diminution of abdominal and cervical gland tuberculosis in children.

Until the proper legislative measures are obtained it is imperatively necessary for the public to sterilize cows' milk for the feeding of children. I think there has been an unfortunate prejudice in this country against the sterilization of milk.

Regarding the channels of infection, the faucial tonsils have in tuberculosis of the upper deep cervical glands an importance not hitherto well enough recognized or understood—that is, they act not only as most frequent portals of entry for the tubercle bacillus, but in a large proportion of cases a well-marked tuberculosis of the upper deep cervical glands is secondary to a small tuberculous focus in the tonsil. The high percentage of faucial tonsils in which the bovine virus was present is further striking proof of the frequency of tuberculous cows' milk as a source of infection.

The results of my investigations are widely different from those of investigators in other countries, but I believe they can be verified by the recognition of several correlative factors: (1)

XUM

The age of the patients; the importance of investigating a large number of consecutive cases of the disease in young children has not been sufficiently recognized. (2) The family history of tuberculosis. (3) The almost universal practice in Scotland of feeding children with unsterilized cows' milk. (4) The great prevalence in Scotland of tuberculosis in dairy cows, and, in conjunction with this, the present very inadequate veterinary inspection and the gross ignorance of the dairy farmers in matters relating to bovine tuberculosis. (5) The fact that about two-thirds of the Edinburgh daily milk supply comes from small byres situated in rural districts round the city, where there is practically no supervision. Greater facilities of infection with the bovine virus are thus afforded in the country compared with the town. Of the children in my series harbouring the bovine tubercle bacillus, almost 50 per cent. had been born and brought up in the rural districts round Edinburgh.

Further, I claim that there is the greater likelihood of a more accurate interpretation of the bacteriological findings if the investigator possesses a combined pathological and clinical experience, and entirely controls the various branches of the investigations.

In conclusion, I have to thank Professor James Ritchie and Mr. Harold J. Stiles for much valuable advice in these investigations.

REFERENCES.

M. Dorset. *Amer. Med.*, 1902, iii, p. 555.
Park and Krumwiede. *Journ. Med. Research*, 1910, xxiii.
Cruickshank. *Brit. Med. Journ.*, 1912, p. 1298.
Cobbet. "Royal Commission," Second Interim Report, Part II Append., iii, p. 23.
Moeller. *Deut. med. Woch.*, 1902, p. 718.
Beck. "Festschrift zum Sechzigsten Geburtstag von Rob. Koch," Fischer, Jena, 1903.
Paul A. Lewis. *Journ. Exp. Med.*, January, 1910.
"Royal Commission on Tuberculosis," Second Interim Report, part II, ii.
H. Burckhardt. *Deut. Zeit. f. Chir.*, Leipzig, August, 1910.
W. Litterer. *Med. Rec.*, December, 1910.
A. Webrr. *Deut. med. Woch.*, December, 1906.
Park and Krumwiede. *Journ. Med. Research*, December, 1911.
F. Oehlecker. "Tuberk. Arb. a.d.k., Gesund.," 1907, vi.
German Imperial Health Board, *Deut. med. Woch.*, October, 1905.
Geo. B. Wood. *Amer. Journ. Med. Sci.*, 1905, p. 224.
Ibid., 1906, p. 620.
Harold J. Stiles. "Syst. Oper. Surg.," by Burghard, iii, p. 6.
Schroeder. "Sixth International Congress on Tuberculosis," part II, iv, p. 604.
"Royal Commission on Tuberculosis," Third Interim Report.

Clinical Articles.

TUMOUR OF THE UMBILICAL REGION COMPLICATED WITH HERNIA.

By E. WALLIS HOARE, F.R.C.V.S.
Cork.

Cases of this nature in the horse are of sufficiently common occurrence to merit consideration. The clinical phenomenon is a swelling of the umbilicus, which resembles an umbilical hernia, but on examination a solid growth is present as well as intestine. The growth appears as if attached to a remnant of the umbilical cord. It is fibrous in character and in some instances a cavity is present in its centre. Occasionally there is adhesion between the tumour and the intestine.

As regards surgical treatment, two methods present themselves:—

(1) Excision of the tumour, preceded by reduction of the hernia, and followed by suture of the umbilical opening. This is no doubt the most surgical method, and it has the advantage of enabling the operator to discover the presence of adhesions. But it is troublesome and not without risks, as the sutures may give way and the intestines then fall to the ground. Or there may be a recurrence of the hernia. Attempts to operate without destroying the hernial sac are doomed to failure, as a recurrence of the hernia is bound to occur.

(2) The use of the clamp. This method, although crude, is successful and simple, provided no adhesions are present. The differential diagnosis often proves difficult, and a very careful examination is necessary in order to decide whether adhesions are present or otherwise, as the tumour is apt to mislead us. If in doubt it is safer to explore prior to fixing the clamp. The best form of clamp is the metal one, provided with regulating screws. It is advisable not to screw up too tightly. In one case which came under my care recently, the clamp did not separate until the sixteenth day, and on assisting removal of the mass there was profuse hæmorrhage. In order to prevent pain at the time of operation and succeeding it, a dose of chloral hydrate administered by enema, succeeded by chloroform inhalation, should be given. A hypodermic injection of morphine and

hyoscine, when the horse rises after the operation, proves useful and prevents the severe pain which is manifested as a sequel to the operation; besides, it ensures quietude and thus favours adhesion of the peritoneal surfaces of the sac.

It is always advisable to give a dose of anti-tetanic serum as a preventive of tetanus.

Experience of both methods of operating have proved to me that the clamp is by far the more preferable, and the same applies to ordinary cases of umbilical hernia.

TUBERCULOSIS IN A HORSE.

By Captain GRAHAM REES-MOGG, F.R.C.V.S.
British Expeditionary Force, France.

On October 10 a horse was brought to me to see suffering from a nasty discharge from both nostrils. I was then informed that eighteen months previously he had had a bad attack of pneumonia, since when he had suffered from a nasal discharge which sometimes got better and then got worse again. His temperature was 102° F. The horse looked very weak and thin, and was very distressed and done up, so he was destroyed. As it was a rest day I was able to make a *post-mortem* examination. The right lung had hardly any normal lung tissue remaining in it. A small portion was in a state of white hepatization from recent pneumonia, and there were numerous gangrenous cavities, varying in size from a pea to a walnut, with calcareous and caseous matter in their walls. The larger ones were of a greenish-black colour. The left lung contained three large (Brazil nut) irregular abscesses containing pus, and also one very large (tennis ball) cavity with calcareous deposits and fibrous tissue in its walls. (A medical officer who was with me informed me that it was typical of a chronic case of tuberculosis in the human subject.) The bronchial and mediastinal glands were also enlarged, one showing signs of caseation. The abdominal organs showed no naked eye appearance of disease. What makes the case so interesting to me is that the horse never missed a day's work (very hard work too) since he came out here on August 16. In my opinion the subject was suffering from tuberculosis of long standing, with recent pneumonia caused by septic infection. I should be very grateful if readers of your Journal who have proved cases by microscopic and other methods to have been tuberculosis would give me their views of this case.

VENTRAL HERNIA, PERITONITIS, AND DEATH.

By W. CARGILL PATRICK, F.R.C.V.S.
Mullingar.

THE subject was an aged harness pony, the history being that the animal had been grazing where the dairy cows were turned out daily, and when seen the night previously was apparently all right, but the following morning was found standing by itself, dull, stiff, and not inclined to move, yet showing no acute pain; on being taken into the stable a fairly large swelling in the right flank was observable, and our attendance was requested. Seen some hours later, a good deal of inflammatory effusion or exudate had taken place—in fact, almost sufficient to mask the hernia present; the wound in abdominal wall readily admitted the tips of three fingers. When the hernia had been reduced, a proper bandage or surcingle applied, pending a suitable pen or stall being got ready, and a sedative administered, the case appeared relieved, and remained so for three days, which justified the hopeful prognosis given, but on the fourth day disquieting symptoms began to appear. As it was found impossible to keep the pony in the special stall prepared for her, and acute colicky pains were present, with a desire to maintain the dorso-sacral position, sedatives and antiseptics were prescribed, but our services were again requisitioned; the following day, as the pain, though relieved, still persisted somewhat, chloral, sodii bicarb. and sodii sulph. in suitable doses were given and hot fomentations ordered. The temperature was subnormal, membranes injected, pulse irritable and accelerated, respirations increased, dull pain was more or less continuous, and death took place on the eighth day, the animal lying on its back for most of the time two days previous to death, this being the only position which seemed to afford relief, and at the same time suggested that the bowel itself had been probably severely bruised or injured when the rent in abdominal wall took place. Unfortunately, I was not afforded the opportunity of a *post-mortem*. It occurred to me that had the fomentations been employed earlier the condition might have been relieved or even checked, but is such practice justifiable in the absence of more urgent symptoms in view of the probable excoriations and subsequent sloughing where the bruising has been intensive? I may mention I had a similar case only a few weeks previously, where the horse had been caught up in a hedge,

XUM

a stab having ruptured the abdominal wall to a much greater extent, yet leaving the skin intact. Fortunately, the effusion in this case was even greater than the above. Same was controlled with cold applications, and no subsequent sequelæ developed, the animal making a good recovery, with no permanent hernia resulting.

Keeping the animal quiet by placing in a restricted space or position, light diet, in fact, semi-starvation, and raising of the hind quarters, I consider of more value than any external application or surgical appliance, that is, of course, for the purely hernial condition.

CONTAGIOUS OPHTHALMIA AMONG CATTLE.

By SATYENDRA NATH MITTER, G.B.V.C.

Senior Lecturer, Bengal Veterinary College.

(From the Raymond Research Laboratory.)

Introduction.

On behalf of the Government of Bihar and Orissa I was deputed last April, with the permission of the Director of Agriculture, Bengal, to go to Puri, to investigate an outbreak of contagious ophthalmia among the conservancy bullocks there. The disease, though peculiar to lower animals, is said to affect human beings as well.

Definition.

This disease may be defined as an acute epizootic ophthalmia, characterized by the usual symptoms of conjunctivitis and discharge consisting of serum, mucus, epithelial cells, leucocytes, &c., and occurring generally in an epidemic, but occasionally in a sporadic form.

Symptoms.

The preliminary symptoms in this outbreak were those of slight fever (temperature rising to 102° to 103° F.), arrest of rumination, and a certain amount of constipation. This was followed by a uniform hyperæmia of the conjunctiva and a profuse watery discharge, consisting of the elements described above. The eyelids became swollen and totally or partially closed. There were hypertrophy and œdema of the lymphoid tissue, and occasional infiltration with leucocytes. After two days the ocular symptoms became aggravated and a small point

of opacity was noticed, which increased (according to the severity of the attack), and sometimes affected the whole conjunctival membrane. In a few severe cases erosions appeared, which in some cases ultimately led to perforation of the eyeball and consequent loss of vision, and in others the eroded surfaces healed up and cicatrized. The period of incubation varied from three to seven days.

Bacteriology.

A considerable number of micro-organisms are responsible for the production of acute epidemic conjunctivitis, but from cultural and biological tests, carried out in the laboratory, it appeared that this epidemic was mainly caused by *Micrococcus lanceolatus* (pneumococcus of Fränkel), and partly by the bacillus of Morax-Axenfeld. These organisms were detected in large numbers in the smear preparations of the affected eyes of the animals. They were chiefly found in and outside the cells of the discharge, and also in the superficial epithelial cells of the conjunctiva. The pneumococcus of Fränkel) is a diplococcus having both the poles pointed, and is surrounded by a capsule. It is easily stained with aniline dyes and with Gram. The bacilli of Morax and Axenfeld are thick bacilli, and occur in pairs or in small chains. These organisms are not stained with Gram and are of a pleomorphic character. They are generally non-pathogenic to lower animals.

It may be noted that both these organisms appear to have no action on unbroken conjunctiva, but when in contact with an abraded surface (as is not uncommon in cattle) they are liable to produce disease.

Treatment.

The treatment resorted to was washing the affected eyes with a corrosive sublimate (1 in 5,000) lotion, and protecting them from dirt, &c.; but beneficial result may also accrue from using boric lotion (1 in 100) or silver nitrate (1 in 100). Recovery generally took place within ten or fifteen days.

Remarks.

This disease, though affecting human beings, especially children, appears peculiar to lower animals. It is highly probable that this outbreak originated by infection from human beings.

My thanks are due to Babu A. C. Routra, Veterinary Assistant of Puri, for his help.

FIBROBLASTIC MYOSITIS OF THE EYE MUSCLES.

[TRANSLATED BY T. M.]

A BULL, about 11 months old, showed prolapse of the right eye, with much cloudiness of the cornea and effusion into the anterior chamber of the eye. At first it was believed that an injury out at pasture had been the cause, and reposition was tried after using cocaine solution. This was successful after considerable trouble. A bandage lined with wadding was firmly placed on, and this was moistened several times daily with acetate of alum solution. The bandage was changed morning and evening. The eye, however, became more and more like a fish's eye, prolapsed again, and could no longer be put back into the orbita. Since there was a flow of tears from the other eye the enucleation of the right eye was resolved on next day, and at the same time orbital tuberculosis was suspected. After anæsthetization the conjunctiva, the muscles, and the nerve were severed by means of the curved scissors. Now the presence of a retrobulbar growth could be seen on close examination of the orbital cavity. After removal of the tumour, cautious disinfection, tamponing with xeroform gauze, suturing of the eyelids was performed, a tip of gauze left out at an opening at the inner canthus and a bandage put on. Microscopic examination of the growth showed fibroblastic myositis of the eye muscles.

PARTURITION CASE.

[TRANSLATED BY T. M.]

AT an official examination of a dairy the owner asked us to look at a cow which three days previously had suffered from a violent attack of colic. The general condition of the cow, far advanced in calf, showed no changes. The udder was much drawn up. The suspected *torsio uteri* was confirmed by the characteristic three-folded condition of the vulva. Exploration of the vagina left no doubt as to the diagnosis. After several turnings to the left of the cast animal the twist was remedied. In spite of long waiting the uterus remained in atony. The

XUM

cervix must be artificially dilated. The fœtus proved to be dead after the envelopes had been opened with an instrument. Further examination gave the following diagnosis as regards the calf: Anterior presentation, head turned to the right, and the right face and right leg of calf bent at the knee accessible. The calf was put straight, and extraction accomplished with the help of several men, as the mother gave absolutely no help and did not strain at all. Although the mouth of the womb was torn and subsequently metritis set in, yet the cow recovered completely. It was noteworthy that the assistant at the parturition and the man who helped him with the calf, as well as the owner of the animal, who carried out the injections, suffered after a few days from a complaint of the hands and arms which took the form partly of suppurating furunculosis and partly of severe lymphangitis, although at the time of the birth thorough disinfection with lysol had been practised.

ACORN POISONING IN COW.

By HENRY B. EVE, M.R.C.V.S.
Folkestone.

Subject.—An aged shorthorn halfbred cow, the property of a Kent farmer about nine miles distant.

History.—The animal concerned had been running in meadow where acorns abound and grass keep is very scarce.

Symptoms.—Dry muzzle, general dulness, loss of appetite, temperature about normal, inveterate constipation present through the astringent action of the contained active principle of acorns, viz., tannin. This was followed by persistent blood-tinged diarrhœa. The animal evinced signs of great pain on pressure of the region of the loins, the urine was colourless and voided in large quantities, and cow continually grunted. The lumen was engorged in a condition known as plenalvia, and somewhat tympanitic, and the omasum had a doughy feel externally, and the usual concomitant symptoms of omasitis were present, with cerebral complications. The cow vomited acorns practically undigested, and passed some during defecation, which aided diagnosis considerably.

Diagnosis.—Acorn poisoning.

Prognosis.—Guarded, unfavourable, animal having been ailing three days and attended by a cow-leech.

Treatment.—Punctured the rumen, gave an oleaginous purgative, ol. lini 2 pints and ol. crotonis 3i. Externally applied mustard as a counter-irritant to the rumen and omasum. Gave internally chloral hydras., pot. bromid. and glycerine of belladonna to relieve the pain, followed on by diffusible stimulants, ammon. carb., zingib., and pip. cayenne; gentian and nux vomica in warm ale to act as nervine tonics. Usual mag. sulph. and treacle given by cowman ere arrival.

Diet.—Demulcent gruels, linseed tea, and boiled roots.

Result.—Recovery took place apparently in about five days, when a relapse followed, and death resulted, as anticipated, from acute prostration.

Post-mortem.—Great gastro-enteritis, bladder full or nearly so. Omasum contained pieces of green and brown shiny husk, the leaves between them being congested. The abomasum was very congested, deep black or purple colour. The small intestine showed inflamed patches like markings of a zebra.

Remarks.—I have seen acorn poisoning in pigs before, but never in cattle.

A BLOOD-CLOT RESEMBLING A STRONGYLE.

By HENRY TAYLOR, F.R.C.V.S.
Haywards Heath.

MR. NOEL PILLERS, in a recent issue, records an example of the above, and as a certain amount of interest was evinced in the occurrence the record of another may not be out of place.

A cow developed a hæmorrhagic nephritis and cystitis, and during the course passed at times clots of blood amongst the urine. One day she passed what to all appearance was a red worm, similar to the Megalocephala variety, and it was only after careful examination and section that I could satisfy myself that it must be a cast of the urethra.

BACILLARY NECROSIS OF THE LIVER: A DISEASE OF THE UNBORN LAMB.

By Professor CAVE, F.R.C.V.S.
South-Eastern Agricultural College, Wye, Kent.

At the beginning of March of this year a report was received at the College from a sheep owner in East Kent, that his ewes were dropping a large proportion of stillborn lambs. As it was supposed to be a matter of agricultural interest, Mr. Garrad visited the farm and found that forty-eight Kent ewes had produced sixty-four dead lambs. The lambs were born at full term, and those which survived birth were found to be strong and healthy and evidently doing well. No injury likely to cause such a loss was discovered, nor was there anything in the management of the ewe flock which could be held responsible for so many stillborn lambs.

The owner then explained to Mr. Garrad that he had examined a number of dead lambs, and in many he had found what he described as "spotted livers." As this seemed a possible clue to the cause of the trouble, the owner was requested to send a dead lamb to the College for a pathological investigation. The first lamb arrived on March 6. It was fully developed, the lungs contained air, proving the lamb had breathed, but the remnant of the umbilical cord was in a perfectly fresh condition, so that evidently the lamb had not long survived its birth.

An examination of the liver at once revealed its "spotted" condition. No other lesions were found in any part of the body. The illustration shows clearly the "spotted" appearance of the liver.

These "spots" had a strong resemblance to the lesions produced by the bacillus of necrosis as found in the livers of other animals, but the centre of some of the diseased patches was slightly depressed, a condition not usually seen in bacillary necrosis. Inquiries of other pathologists and a careful search through the literature of bacillary necrosis failed to discover any information as to this disease affecting the livers of unborn lambs. Bacillary necrosis is met with in many different forms in the domesticated animals, all of which appear to be susceptible to infection. The bacilli are found in the diseased areas in long wavy filaments which are intricately interwoven. They are strict

XUM

anaerobes and have a wide distribution in the soil, especially of cultivated land.

The arrows show the diseased patches in the liver.

Natural infection may occur through the alimentary canal, or by means of wounds or abrasions.

The bacillus has been found in certain cases of poll-evil, quittor, ulceration of the intestine in horses.

In cattle it has been found in "foul-in-the-foot," and certain affections of the mouth. It has also been seen in necrotic areas in the livers of cattle and sheep, and in certain forms of navel-ill in both calves and lambs; but in no case, as far as can be ascertained by the writer, has it been known to cause bacillary necrosis of the livers of unborn lambs.

In navel-ill of lambs, occurring some weeks after birth, the bacillus has evidently reached the liver by way of the open umbilical vein. As a result of the invasion numerous areas of necrosis are found in the liver.

In the outbreak under investigation the diseased condition of the liver had evidently preceded birth, as the lamb had lived, at most, only a few hours.

It appeared to us that this loss of stillborn lambs might be something new to science, and a further investigation was desirable.

The owner was asked to send dead lambs as opportunity served. Altogether ten dead lambs were received and examined. In each case the umbilical cord was examined and the lungs were tested for the presence of air.

Of the ten examined, eight were found to have "spotted" livers; the remaining two showed no signs of the disease. Two other lambs were sent from another farm, but neither was affected.

The eight lambs which were found to be diseased were of different ages. Some had never breathed, as shown by the uninflated lungs; some had just breathed, but the umbilical cords were found to be quite fresh; others had lived one or two days. The oldest examined were fourteen days old. In all the same diseased areas were found in the liver. In one case, in which the lamb had lived a fortnight, a few large diseased patches were found exactly similar to those shown in the illustration, but in addition there was a large number of much smaller areas, which it was thought *might* possibly have developed from infection through the navel *after* birth.

A microscopical examination of the diseased areas was made and the presence of the bacillus of necrosis was determined.

A shake culture of the necrosed tissue in nutrient agar was

prepared, and grew colonies of the bacillus of necrosis resembling small balls of cotton-wool. In glucose agar the growth caused considerable breaking up of the medium by gas formation. A rabbit was inoculated with an emulsion of the necrosed tissue into the thigh. In ten days extensive necrosis of the skin was seen. The rabbit was then destroyed and examined. There was extensive necrosis of the skin, and a circular patch of necrosis extended through the muscles of the abdominal wall at the groin down to the peritoneum. The area of necrosis in the abdominal wall had the appearance of tissues destroyed by a strong acid.

As a result of the investigations, it was concluded that the loss of about 100 lambs, mostly stillborn, was due to bacillary necrosis of the liver, but no evidence could be obtained as to the origin of the disease. It was evident that the disease must have existed for some considerable time before birth, and the only route by which the bacillus could reach the liver of the fœtus *in utero* would be by the umbilical vein and the blood returning from the placenta, where the blood of the fœtus must have become infected from the uterine blood. An attempt was made to discover the presence of bacillary necrosis in the ewes, but unfortunately only one was available, and yielded a negative result, and the investigation ceased for lack of further material.

The disease, although unknown, must have occurred on many occasions and has passed unnoticed. As it evidently is of some economic importance it is desirable that further investigations should be made, and flock-owners are earnestly requested to communicate with the Veterinary Department of the College should any "spotted" livers be found in stillborn lambs or in lambs a few days old.

INOCULATION AGAINST SWINE FEVER.*

CONCLUSIONS OF REPORT, BY PROFESSOR F. HUTYRA.

SWINE fever may be successfully combated by serum injections and by simultaneous inoculations.

A potent serum confers immunity against both experimental and natural infection with the filterable swine fever virus, and indirectly against secondary bacterial infections (mixed infec-

---

* Reprinted. Tenth International Veterinary Congress, London.

XUM

tions). Animals that are injected with serum and simultaneously or shortly afterwards exposed to natural infection acquire a permanent active immunity. Serum injection is therefore indicated in the case of recently infected premises, and if the injections are made as soon as the presence of the disease is recognized they have the effect of rapidly cutting short the outbreak.

By the simultaneous method pigs immediately acquire an active immunity which is lifelong. On previously healthy premises the simultaneous method, as a rule, causes little or no loss, but excessively severe inoculation reactions cannot be avoided. Until the inoculation reactions are passed great care must be exercised to prevent the spread of the disease.

A BRIEF NOTE ON AN OUTBREAK OF SEPTICÆMIA AMONG THE MONAL PHEASANTS OF THE CALCUTTA ZOOLOGICAL GARDEN.

By Major A. SMITH, F.R.C.V.S., &c.
Principal, Bengal Veterinary College,
and
S. N. MITTER, G.B.V.C.
Senior Lecturer, Bengal Veterinary College.
(From the Raymond Research Laboratory.)

Introduction.

About the last week of February a fairly widespread virulent outbreak of septicæmia broke out among the monal pheasants of the Calcutta Zoological Garden, which carried off within a few days many valuable specimens. Our thanks are due to Mr. Basu, the Superintendent of the Garden, for sending us three bodies for *post-mortem* examination, and thus affording us an opportunity of studying the disease.

Definition.

This disease may be defined as a virulent septicæmia, characterized by suddenness of attack, somnolence, violent diarrhœa, and fatal termination within a few hours.

Symptoms.

At the onset the birds became dull and depressed, and preferred to sit alone and keep to themselves. Their feathers seemed ruffled and disarranged. These symptoms were followed

by greenish yellow diarrhœa occasionally tinged with blood. Their feathers became soiled with fæcal matter. Thirst was present, with occasional champing of the jaws. They became very sleepy, and only aroused themselves from their stupor when they were made to do so. In some instances vomition was also present. Death generally took place within twenty-four to forty-eight hours.

Incubation and Duration.

Owing to suddenness of attack and rapid termination the period of incubation generally remained unnoticed. In experimental cases death usually took place in rabbits in eighteen hours, pigeons in twelve hours, and chickens in twenty-four hours.

Subjects susceptible.

The inoculation experiments have shown that G.P.S. pigeons and young fowls are very susceptible to this disease. Adult fowls and rabbits resist the infection to a considerable degree.

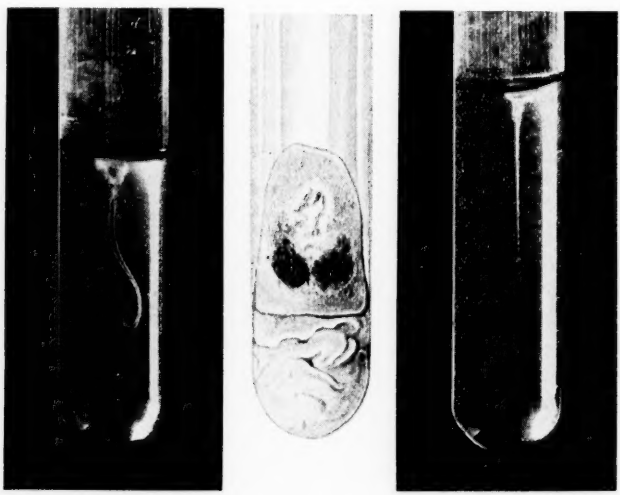

Figure illustrating the appearances of the cultures in various media respectively.

Post-mortem.

In spontaneous cases the main pathological changes were chiefly confined to the gastro-intestinal tract. There was uniform congestion and inflammation of the canal. The gizzard and the

proventriculus were full of serous exudate. The intestinal mucous membrane was highly inflamed and showed desquamation of epithelium, and contained yellowish blood-coloured liquid. The spleen appeared to be anæmic, but the rest of the organs were normal.

BACTERIOLOGY.

From the cultural and biological experiments carried out in the laboratory we have been able to isolate the micro-organism which is responsible for this outbreak. This is known as "*Vibrio Metchnikovii.*" The organism was present in large numbers in the smear preparations of different organs and intestinal contents of the animals sent to us. They were also recovered in pure cultures, which, when injected into susceptible animals, reproduced the disease. The vibrio of Metchnikoff appear in thick curved, blunted rods, or resembling cocci or small bacteria in the short and thicker specimens, or in spiral filaments. They are easily stained with methylene blue, carbol-thionine, weak solution of fuchsin, gentian violet, but do not take Gram. They grow in all ordinary media.

In Broth.—A uniform turbidity takes place in twelve hours, followed by a formation of a thin pellicle on the surface within twenty-four hours.

On Agar Slant.—A yellowish-white luxuriant growth, with a deep tint in the centre within twenty-four hours.

In Gelatine Stab.—The top layer of gelatine is liquid within twenty-four hours, followed by formation of gas bubbles in forty-eight hours, the growth resembling a funnel.

On Potato.—A yellowish-brown growth, varying from forty-eight to seventy-two hours.

In Eggs.—Inoculated with Huppe's method shows in ten days that the white is quite dissolved and converted into a turbid yellowish fluid, while the yolk, which preserved its shape and consistency, became quite black.

Broth or peptone cultures twenty-four to forty-eight hours old, when treated with sulphuric acid and nitrate of soda, showed a very strong reaction to indol.

PREVENTION.

The best thing is to evacuate the infected enclosures for some time and to have them thoroughly whitewashed and painted.

The birds removed should be placed in small isolated cages, so that if any more become affected the disease will not spread to the healthy. The droppings of the infected birds should be burned, and new purchases should be kept under quarantine for about a week.

REMARKS.

In 1888 Gamalia, in a series of papers in the *Annals de l'Institut Pasteur*, first described an epizootic disease among fowls in Odessa, Southern Russia, and isolated the causative micro-organism, which he named as *Vibrio Metchnikovii* in honour of Professor Metchnikoff. Since then it has been studied by Pfeiffer in Berlin and by Kutcher in Lahn.

This micro-organism cannot be safely distinguished from that of Asiatic cholera of man by morphological and cultural tests, but only by biological experiments.

We are inclined to believe that this outbreak is quite identical with that described by Gamalia, and so far it has not been recorded in this country.

Canine Clinicals.

CANINE FILARIASIS.

By S. N. MITRA and H. C. GANGULY.
(From the Raymond Research Laboratory, Calcutta, India.)

THE subject was a red kangaroo hound dog belonging to a European lady, and was admitted into this College Hospital on July 29, 1912, for treatment of punctured wounds in the shoulder. The animal appeared to progress satisfactorily, but on August 22 its temperature rose to 104° F. without any appreciable cause. The repeated administration of febrifuges, followed by cholagogues, produced no beneficial effect on the patient. From August 22 to 26 the thermic record showed 102° F. as minimum and 104·4° F. as maximum. On the latter date the blood was submitted to microscopical examination, and a number of filarial embryos were detected in the specimen. In their fresh state they appeared to be long, slender, snake-like organisms, translucent and apparently structureless, wriggling about in the blood; when stained with methylene blue or hæmatin and eosine they

were found to be composed of closely packed granules of protoplasm, with no definite detectable sheath. The body of the parasite was cylindrical and of the same dimensions throughout, except at the tail, which was tapering and finely pointed. The mouth of the embryo was conical and blunt and devoid of cephalic armature. The average length was 300 microns.

The number of parasites varied in the smears taken at different times of the day, being few (one to three in the morning, and as many as five to ten in the evening). An attempt to reproduce

Filarial embryos.

the disease by inoculation was an apparent failure—most possibly an intermediate host being required. Experiments in order to determine an intermediate host and other observations on the biology of the parasites could not be pursued, as the owner removed the dog from the hospital within two days after the parasites had been first detected on her way to a hill station.

REMARKS.

The embryo had a length of 300 microns, much greater, therefore, than those *Acanthocheilonema recondita* and *A. dracunculoides*, whose reported embryos measure 195 to 230 microns in length. By their measurement these embryos place themselves

between the embryos of *Dirofilaria repens* (300 to 360 microns) and those of *D. immites*, which reach only 280 to 295 microns. As most of the organisms measured about 300 microns, we are inclined to believe that the species concerned were the embryos of *D. immites*.

OPERATION FOR PERINEAL HERNIA.

By HENRY TAYLOR, F.R.C.V.S.
Haywards Heath.

Hernias in the region of the perinæum are not common. The subject of the photograph had had a swelling in that region for some time which had not inconvenienced the bitch much, but latterly it increased in size and seemed to cause a certain amount of discomfort

Photograph illustrating the exact position of the swelling.

to the animal. The size of the swelling was about that of an orange with a thick attachment or neck. After anæsthetizing the animal an incision was made through the skin in a vertical direction from near the anus to near the vulva. Then came a surprise, for the amount of hæmorrhage was simply astounding, being so profuse that one could not cope with the flow until such a quantity had been lost as to endanger life. The remainder of the operation consisted of the enucleation of the mass, which was comparatively easy, and ligation of the neck; when that stage had been expeditiously arrived at the hæmorrhage was much less profuse. The mass seemed to be solid, and after making sure that the bladder was not implicated it was

excised posterior to the ligature. The skin was sutured and the empty space stuffed with gauze.

The patient was in a state of collapse by this time and for two days was unable to stand, but by appropriate treatment she eventually made a good recovery. For two or three days after the operation there was a fair amount of hæmorrhage from the *vagina*, which was inexplicable, though on examination of the excised mass I found that in the centre of the stump or neck there was a bit of mucous membrane which was apparently from the roof of the vagina.

The mass seemed to be composed of very vascular omentum. The ligature and the tissue posterior to it sloughed away in due course, the wound healed well, and finally the appearance of that region did not differ from the normal.

A NEW IDEA (RETRACTION OPERATION) FOR RELIEVING OBSTRUCTION DUE TO NARROW NASAL ORIFICES.

By F. T. TREWIN, M.R.C.V.S.
Watford.

Having on numerous occasions had puppies, especially Pekingese and bulldogs, brought to me with narrow nasal orifices, I decided to try the effect of surgical interference to pull the alæ upwards and thus cause widening. Everyone in canine practice knows the distressing symptoms shown, especially in the short-nosed breeds of dogs and when trying to drink fluids; the bubbling froth which comes from the nostrils upon the slightest exertion and when the head is lowered, especially with liquid or semi-liquid food, some puppies, indeed, being so affected as to become emaciated, and die from inability to obtain proper nutriment. The operation I have tried in two cases, and which has brought about a perfectly successful result, has been to excise an elliptical piece out of the skin just about the wing of each nostril, suturing this together in a similar manner to what is done with the eyelid in entropion. The operation wound has healed by primary lesion and given no further trouble.

In one case the puppy, before operation, had such distressing dyspnœa that it could not even breathe without opening the mouth, and now it breathes normally through the nostrils.

XUM

Translations.

THE INTERNAL USE OF LIQUID PARAFFIN, ESPECIALLY IN THE TREAMENT OF INTESTINAL OBSTRUCTION.

By MARQUET.

In America and England for several years liquid paraffin has been used in the treatment of stoppage, and in France it was used for the first time by Professor Pauchet. In the pure state it is odourless and tasteless and is not changed by alkalies, acids and oxidation agents.

Introduced into the digestive tube it resists the effect of all ferments. Since chemically it contains no fat it is neither attacked by gall nor pancreatic juice and it may be found quite unchanged in the fæces. Incorporated experimentally into the system, as, for example, subcutaneously, it is only quite gradually absorbed, and, according to Cadéac and Meunier, it is then excreted with the urine, and, according to Sobieranski, it is utilized by the system.

In the pure state and in small quantities it causes no poisonous symptoms, only in big doses (65 to 100 grammes) does it occasion vomiting and diarrhœa in dogs.

Properties.—Liquid paraffin has no purgative effect, for it has no chemical action and is not absorbed, therefore it is not in a position to influence the secretions and to stir up intestinal peristalsis to any notable degree. It acts like fatty bodies and has the advantage of animal and vegetable oils in neither being absorbed by the intestinal juices nor changed by the intestinal flora. It permeates the intestinal contents, making them softer, and by lubricating the intestinal mucosa aids its removal towards the anus. Besides this purely mechanical action it acts slowly on intestinal absorption, so that the evacuated fæces is more fluid than is the case normally. If no diarrhœa is present liquid paraffin has the great advantage over other purgatives that it causes no irritant effect on the intestinal mucosa. This is contrary to its action on inflammations of the skin and external mucosæ.

Indications.—Liquid paraffin is indicated for preference in the treatment of stoppage and chronic enteritis. Since it lessens absorption and produces normal evacuations it is useful in chronic

enteritis with a swollen and granulating mucous membrane, strengthening its absorption capacity and restoring its normal condition. It has been successfully used in hæmorrhoids. Robinson praises it even in the treatment of tuberculosis. It may be given to dogs in doses of 10 to 20 grm. daily, an hour before the first feed, until the fæces are passed regularly and normally.—*Académie de Médecine* (Sitting of January 27, 1914).

CHLORAL HYDRATE NARCOSIS IN HORSES.

By H. J. FRIIS.
Veterinary Surgeon, Copenhagen.

In chloral hydrate veterinary medicine possesses a narcotic with pronounced advantages over chloroform, ether, and morphia, so much so that it is hard to understand why it is not used by a greater number of veterinary surgeons.

All methods of the application of chloral have their drawbacks.

The stomachal application of the drug shows that a marked narcosis can be produced by oral administration, and that chloral hydrate is a very suitable narcotic for veterinary surgery, and in most cases is quite satisfactory.

One thing that militates against its stomachal use is the disinclination of the horse to take the dissolved chloral in the drinking water. The author has had the opportunity of administering chloral to 685 horses, and has compiled statistical data from the results.

The subjects included foals 7 months old and animals 20 years of age. Employment of the drug *per os* was preceded by a period of preparation, in summer twenty-four hours and in winter forty-eight. During this time the horses received only half rations, nothing on the day of operation, and especially no drinking water.

Further, the chloral must be freshly dissolved in a little water and then given to the horse in half a bucketful of water.

The dose varies (according to the breed, size of the horse, length of operation, and time of year) from 20 to 70 grm. (5 to 17 dr.), averaging 40 grm. (10 dr.).

If the horse shows no inclination to drink the solution it may be administered in different ways. Often the horse will only drink if it stands in its usual stall. Many horses take the chloral

better if bran or sugar is added to the drinking water. If the horse will not take the chloral, as happens in from 7 to 8 per cent. of cases, then the drug must be given as a ball or a drench. If it is desired to shorten the time of preparation one may conveniently give the horse small doses of salt.

Statistics show that of 685 horses 503, or 73·4 per cent., took the chloral without difficulty; 105 horses, or 15·3 per cent., took the chloral with the addition of bran.

Altogether 608 took the chloral in the drinking water. Seventy-four horses took the chloral in a ball, 2 in electuary, 1 drank almost all the dose in the drinking water, but received besides a small chloral clyster.

Of 74 horses which would not take the chloral hydrate in the drinking water 22 were not prepared, 7 horses had been without water for twelve hours, 1 horse twenty hours, 30 horses twenty-four hours, 7 horses forty-eight hours, and 7 horses seventy-two hours.

Apart from the 22 unprepared horses, the number of horses which received the chloral in bolus was 52. Well-bred horses took longer to narcotize than heavy and gross ones. The numbers also showed that besides the breed individual idiosyncrasy had its effect.

The method often succeeded even with faulty preparation, but generally in the employment of the drug *per os* drinking water must be withheld at least twenty-four hours.—*Maanedskrift for Dyrlaeger.*

Abstracts.

ON THE TREATMENT OF TETANUS BY MAGNESIUM SULPHATE.

Dr. H. Stadler, in an exhaustive treatise on the treatment of tetanus by magnesium sulphate, concludes his article with a series of statistical tables, the final one of which is a comparative summary of the results so far obtained by the various methods of treatment.

He says that it is still too early to state which of the three methods of symptomatic treatment will turn out best, as a sufficient number of cases have not yet come under treatment; but that one great advantage of the magnesium sulphate treatment is that it brings the patient rapid relief from pain.

Comparative Statistics of the Death-rate from Tetanus treated by Various Methods, compiled from the Statistics of the Writers below mentioned.

Inoculation period	Without serum	With serum	With carbolic acid	With Mg. SO_4 intralumbar injections	With Mg. SO_4, subcutaneously
1 to 10 days	Kentzler 76 per cent. Richter 95 per cent.	Kentzler 52 per cent. Jacobsen and Pease 84 per cent.	Stadler 28 per cent.	Stadler 42 per cent.	Stadler 0 per cent.
Total cases and average death-rate	220 cases 86 per cent.	258 cases 67 per cent.	54 cases 28 per cent.	26 cases 42 per cent.	4 cases 0 per cent.
Over 10 days	Kentzler 44 per cent. Richter 70 per cent.	Kentzler 32 per cent. Jacobsen and Pease 43 per cent.	Stadler 6·4 per cent.	Stadler 9 per cent.	Stadler 0 per cent.
Total cases and average death-rate	166 cases 59 per cent.	186 cases 36 per cent.	47 cases 6·4 per cent.	11 cases 9 per cent.	3 cases 0 per cent.
Total	Kentzler 60 per cent. Richter 85 per cent.	Kentzler 42 per cent. Jacobsen and Pease 70 per cent.	Stadler 18 per cent.	Stadler 33 per cent.	Stadler 0 per cent.
Total cases and average death-rate	386 cases 74 per cent.	444 cases 54 per cent.	101 cases 18 per cent.	37 cases 33 per cent.	7 cases 0 per cent.

—*Journ. Roy. Army Med. Corps.*

RESULTS OF MATING AND THEIR TEACHING.

By A. HINK.

Since much of interest from the point of view of zootechny and biology may be learnt from a collective table of covering reports, I am forwarding you those published in a recent number of *Zeitschrift für Gestütskunde* :—

State breeding station	No. of stallions	Mares covered			Living foals			Remarks
		Total	Those pregnant	Per cent.	Total	Horse foals	Mare foals	
Trakehnen (1912) ...	14	400	308	77	287	126	161	Duration of pregnancy: average 338¾ days; longest 358 days, shortest 319 days
Braunsberg (1912) ...	167	9,039	6,554	72·5	5,381	2,601	2,780	
Rastenburg (1912) ...	188	11,626	8,010	70	6,879	3,330	3,549	
Brunswick Stud, Harzburg (1912-13)	2 (?)	45	35	78	31	--	—	
Augsburg (1912) ...	95	5,481	2,501	45·6	2,120	1,055	1,065	
Ansbach (1912) ...	116	5,514	?	?	2,627	1,236	1,391	
Pfalz (1912)	52	2,482	1,300	52·58	1,189	574	615	
Alsace-Lorraine ...	73	5,199	2,384	45·8	2,157	1,022	1,135	
Baden (1911-12)	Belonging to the State 120 State supported	7,480	3,572	47·7	3,269	1,603	1,666	So-called approved stallions
	118	5,605	2,543	45·3	2,157	1,063	1,094	56 per cent. ordinary stallions, 44 per cent. of half-blood stallions used in covering
	943	52,871 −5,514 Ansbach 47,357	27,207	60·5 average	26,097 − 31 26,066	12,610 = 48 per cent.	13,456 = 52 per cent.	

According to this table, at the 9 stations under review one stallion served about 56 mares, certainly a moderate average. In Trakehnen the number was about 29, in Rastenburg 62, in Augsburg 57·7, Ansbach 47·5, Pfalz 47·7, Alsace-Lorraine 71·2 and 62, in Baden 47·5 to one stallion. In Oldenburg a stallion covers on an average 120 to 130 mares, and the East Friesian stallion, Sultan II, covered 315 mares in 1902. A well-kept, mature stallion may cover two mares daily during the mating period. When we consider the percentage of pregnancy we immediately notice that the figure in the North German half-bloods and full-bloods is considerably higher than in South Germany ; in the four northern breeding stations the average was 74·4 per cent., in the five southern stations 47·5 per cent. In

the South German stations half-bloods and ordinary stallions were used, in Alsace-Lorraine the latter predominated largely, in Baden up to 55 per cent. It is known that mares of the heavy working breeds come out worse than mares of the pedigree stamp. In the Rhenish-Belgian breed one comes across a pregnancy figure of about 50 per cent. In Oldenburg one reckons on an average of about 75 per cent. The above-mentioned East Friesian Sultan II. covered 2,257 mares in ten years, of which 65·37 per cent. were pregnant. Self-evidently the profitableness of horse breeding depends on the height of the pregnancy figure. It is proportionately seldom that the stallion is to blame for the failure to fructify. The nourishment and care of the stallion in the mating season can doubtless influence potency (especially as regards the energy of the spermatozoa). Then follows the whole art of the breeding of the stallion, his descent, temperament, &c. In the mare there are often breeding, nourishment, and management faults which hinder ovulation and œstrum, and make fruitfulness difficult. Under like conditions indigenous local mares do better than introduced ones. Then, again, the putting of the mare to the horse on the ninth day after the first covering not only has no sense in it, but in certain circumstances may be injurious, as I have previously taken the opportunity of mentioning.

It is of interest to compare the number of living foals with the number of mares pregnant. In one case, from figures omitted from the table, out of 373 mares that became pregnant no living foals were produced—a very high figure. Many mares abort from one cause and another, often preventible ; also many foals die in the act of parturition. The treatment of pregnant mares might be better in many places. There is rather a difference in this connection between north and south German breeds. In the northern stations the loss of foals in 14,907 pregnant mares was 2,329, and in the five South German stations in 12,300 pregnant mares there was a loss of 1,408 ; 15·6 per cent. in North Germany and 11·4 per cent. in South Germany. The pregnant pedigree mares were more susceptible than the others.

As regards sex, the table shows a preponderance of about 4 per cent. of mare foals. In man (59,350,000 births), according to Oesterlen, there were 100 girls to every 106 boys. According to the German agricultural figures, out of 367,477 calves 48·7 per cent. were males and 51·3 per cent. females, and a similar proportion prevailed with horseflesh.

As regards duration of pregnancy, a 20-year old mare had the longest period—viz., 358 days. In the Prussian and Hungarian State studs the mares went from 333 to 343 days.—G. M.

CIRCULAR RESECTION OF THE TRACHEA FOLLOWED BY PRIMARY SUTURING.

By Dr. JOSEPH MARES.

Dr. Mares gives the results of experiments made to remove portions of the trachea by circular resection and to unite the fresh healthy incised surfaces by suturing in order to render the tracheal tube just as normal as it was originally. Mares was induced to make these trials because of the experience that tracheotomy in the horse is pretty often followed by stenosis of the trachea. As material he operated on four anatomy horses and four dogs. After giving the anatomical relations of the trachea Mares discusses the indication, treatment, operation, clinical course, pathological anatomy and microscopic appearances, and comes to the following conclusions :—

(1) The favourable removal of tracheal stenosis may be brought about by total circular resection followed by primary suture of the trachea.

(2) The suture is put through the inner edge in the posterior peripheral half and through the outside in the anterior half of the trachea, button sutures being used.

(3) As suture material iodized catgut is very good.

(4) The operation is performed with the head depressed.

(5) Tracheotomy below the place of operation is not necessary.

(6) In the subsequent treatment fixing of the head and neck in the bent position is advisable and necessary.

(7) With regard to the piece of trachea resected in the horse the maximum number of rings removed was six, which length is sufficient for the most extensive stenosis.

Reviews.

A System of Veterinary Medicine by Various Writers. Edited by E. Wallis Hoare, F.R.C.V.S. Published by Baillière, Tindall and Cox, Covent Garden, London, W.C. 1915. Second volume, royal octavo, pp. xx + 1600. Price of the two volumes, 50s. complete.

For many years the British veterinary surgeon was a long way behind his Continental *confrère* in original works of reference, and depended for his up-to-date literature upon the translations of foreign publications. These were, and still are, excellent, but it was a reproach to the English-speaking world that no one had energy, time, and ability to put on record a volume, or series of volumes, which could find a valuable place in a practitioner's library, and be referred to for the solution of the knotty problems which confront thinking men every day in their desire to overcome disease.

In editing such a volume Mr. Hoare has done wisely to seek assistance, for no one man nowadays can possibly hope to pose successfully as a specialist on every disease to which animals are subject, and to give second-hand knowledge would be to defeat the object in view in bringing out a book like this. To select any special writer or even group of diseases would be invidious, and to take the whole in turn would necessitate far too lengthy a review for any journal. All are good and full of information; information, too, put in such a concise manner as to be of service to, and obviously intended for, the edification of the general practitioner.

For the student, also, it becomes a necessity, and, utilized in conjunction with class notes and his own observation, will decide points of variance and doubt, and set at rest his examination qualms. Bound and well finished, one must give a meed of praise to the publishers, to whom the launching of a veterinary text-book of such a size and length must mean a big outlay, although in this instance there can be no doubt but that it will be repaid, for there is no other work of the kind by British authors; and the editor, when he completed his self-imposed and onerous task of reading so many fairly correct proofs, must have justifiably felt a thrill of pride and gratification in having accomplished a task which he knew must be appreciated by his professional brethren in all English-speaking countries.

The Surgical Anatomy of the Horse. Part IV. By J. T. Share-Jones, M.Sc., F.R.C.V.S. Pp. xx + 260, with 21 full-page illustrations (13 coloured). Price 16s. 6d. net. Published by Baillière, Tindall and Cox, Covent Garden, London, W.C.

Some years ago the first volume of "The Surgical Anatomy of the Horse" was published, and three others have followed in due course, the final volume having just emerged from the press. The idea of the author was to present to his colleagues a work

XUM

which would be of especial value for the surgeon, one which would deal in particular with the surgical anatomy of the various regions of the body upon which the surgeon's art was of necessity practised. By means of text descriptions, drawings, and coloured plates the subject is clearly brought forward, and the book is one which is certain to be most helpful, not only to the practitioner but also to the student. The illustrations, in particular, are beautifully executed, and show at a glance the facts desired, and it is of these that the author has made a special point, in which he has amply succeeded.

Anatomical variations are entered into in detail, and in places operations are briefly described.

The work is well bound and finished, and is altogether a valuable addition to our veterinary literature.

The Rhodesia Agricultural Journal, August, 1914. Edited by the Director of Agriculture, assisted by the Staff of the Agricultural Department. Published bi-monthly. Price 5s. per annum. Printed by the Argus Printing and Publishing Co., Ltd., Salisbury, Rhodesia.

This issue of the useful and interesting journal is quite up to the level of its predecessors. The editorial section is chiefly occupied with short notices of agricultural shows, which seem to be pretty prevalent in Rhodesia in the summer months. From the reports we gather that these shows are fulfilling their proper function in causing a healthy competition among agricultural exhibitors and maintaining profitable technical and social advancement. The Rhodes Trust experiments indicate that much useful pioneer work in connection with irrigation, stock-breeding and soil fertility investigations is being carried out by the officers of the Trust. We note that Mr. J. M. Sinclair, Chief Veterinary Surgeon, came over to England for the Congress, and can only express our sorrow that he has not been able to return to our brethren in South Africa with "a feast of reason and a flow of soul," which he would doubtless have gathered from the proceedings of the Congress if fate had not decreed otherwise. From the extracts published in the periodical from his Report we gather that the Veterinary Department which he controls and supervises has been very busy during the year 1913. Outbreaks of African Coast Fever, bovine plasmoses, black quarter, tuberculosis, trypanosomiasis, rabies, and glanders occurred in the colony and were all dealt with effectively by the Department. The Assistant Chief Veterinary Surgeon, Mr. Edmonds, M.R.C.V.S., went to German East Africa to inquire into rinderpest operations as conducted there and attended a Conference at Buluwayo, which discussed his report on the disease. The Veterinary Bacteriologist was away during the year 1913 studying recent advances in veterinary science in Great Britain. During his absence the routine work was carried on by District Veterinary Surgeon Williams, but no special research work was performed.

The rest of the journal is taken up with articles on "The Preparation of Oranges for Market" (well illustrated), contri-

buted by C. E. Farmer; "Concrete and Reinforced Concrete," by E. Hardcastle, M.I.E.E.; "The Manuring of Maize," by G. N. Blackshaw, B.Sc., F.C.S.; and "The Ground Nut or Monkey Nut," by H. Godfrey Mundy, F.L.S. A devourer of maize, the dusty surface beetle, is interestingly written about by R. W. Jack, F.E.S., the Government Entomologist. Work of this description revealing the habits of destructive agricultural pests and how to deal with the evil is always of paramount importance, and we congratulate Mr. Jack on his well-written and well-illustrated article.

We have frequently reviewed the *Rhodesia Agricultural Journal* previously, and can only repeat our expression of praise for the good work it is doing among the thinking and reading agricultural community. G. M.

REPORT OF THE KENNEL CLUB SUB-COMMITTEE ON VENEREAL OR INFECTIVE GRANULOMATA.

The Kennel Club Council of Representatives appointed a Sub-Committee to collect information as to the existence and prevalence of venereal diseases amongst dogs, and to report to the Council what steps or regulations the Council should recommend for adoption by the Committee of the Kennel Club, with a view to bringing to the knowledge and attention of the owners of stud dogs, dog breeders, and others, the symptoms of such diseases, and the danger and impropriety of not doing everything to prevent their spread.

The Sub-Committee appointed have held meetings and collected evidence on the subject, and herewith submit their report.

They are specially indebted to many Fellows and members of the Royal College of Veterinary Surgeons, who have either written to them on the subject, or appeared before them as witnesses, and also to several breeders of bulldogs of long standing and great experience.

In many instances the evidence gathered is inclined to be contradictory, and the expert evidence does not agree in every instance with that of practical breeders.

The point which chiefly concerns us, and one which all witnesses agree upon, both expert and practical, is that the disease is by no means as prevalent as it was some years ago. This is accounted for by the fact that breeders and exhibitors are now much more careful of their animals, which are better cared for in every way, and are usually kept under better hygienic conditions.

The mass of evidence goes to show that there is no connection between infective granulomata of the reproductive organs and the papillomatous growths found in the mouth.

XUM

The greatest number of witnesses are of the opinion that the disease can only be acquired through actual contact, and some go so far as to express the belief that it is only acquired by bitches when the vaginal mucous membrane is relaxed as in actual œstrum, many experiments to infect bitches not in season having proved futile.

On the other hand, cases are reported by practical witnesses in which the disease has been observed in maiden bitches, and in one case where the bitch in question was the only one kept, and had no chance of being infected by discharges from other dogs or bitches.

It is, however, beyond dispute that the disease is infectious, and that the usual means of transmitting it to either sex is by copulation.

The disease may be easily cured, in most instances, by surgical means.

The Sub-Committee think it advisable that members of the Council should report to members of their clubs: (*a*) The existence of the disease, warning them that all breeds may be liable to infection, but more especially bulldogs, bulldogs miniature, French bulldogs and pugs, in the order named; (*b*) that from time to time all stud dogs should be examined, and that no dog should be used should he show any signs of tumour or wart-like growths on any part of the penis or prepuce, more especially at the base of the former; (*c*) that in every instance all stud dogs should have the prepuce syringed with a non-irritating antiseptic after coition; (*d*) that in every instance bitches sent for service should be examined, and infected bitches or any bitch which shows any signs of growths inside the vulva should be refused.

Taking into consideration that the prevalence of the disease is on the decline, the Sub-Committee are of opinion that there is no need for the Council to recommend to the Committee of the Kennel Club that they should take any steps in the matter. They consider that anyone allowing a stud dog to be used or sending a bitch for service, knowing that such dog or bitch is suffering from this disease, could be dealt with under K.C. Rule XVII.

NOTE.—All communications should be addressed to 8, Henrietta Street, Covent Garden, London, W.C. Telephone, 4646 Gerrard. Telegrams, "Baillière, London."

Letters for the JOURNAL, literary contributions, reports, notices, books for review, exchanges, new instruments or materials, and all matter for publication (except advertisements) should be addressed to the Editors.

Manuscript—preferably typewritten—should be on one side only of paper, marked with full name of author.

Illustrations for reproduction should be in good black or dark brown on white paper or card.

Advertisements and all business matters relating to the JOURNAL should be addressed to the publishers, Messrs. Baillière, Tindall and Cox.

XUM